

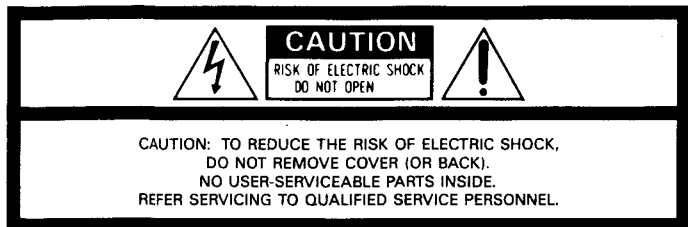
AV-77

PAL

**OPERATING INSTRUCTIONS
BETRIEBSANLEITUNG
MANUAL DE INSTRUCCIONES**



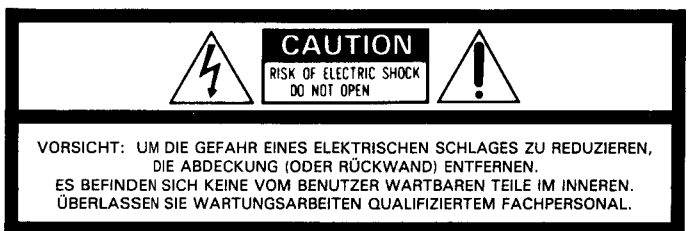
Sansui



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



Der Blitz mit dem Pfeil an der Spitze in einem gleichschenkligen Dreieck soll den Benutzer vor nicht isolierter "gefährlicher Spannung" im Produkt warnen, die eine Stromschlaggefahr für Personen darstellen kann.



Das Ausrufezeichen in einem gleichschenkligen Dreieck soll den Benutzer auf wichtige Betriebs- und Wartungsanleitungen im mit dem Gerät mitgelieferten Text aufmerksam machen.



La iluminación parpadea con un símbolo de flecha, dentro de un triángulo equilátero, para avisar al usuario de la presencia de "tensión peligrosa" no aislada dentro de la caja del aparato de una magnitud suficiente para constituir peligro de descargas eléctricas para las personas.



El punto de exclamación de dentro del triángulo equilátero es para avisar al usuario de la presencia de instrucciones importantes de operación y mantenimiento (servicio) en los manuales que se sirven con el aparato.

ENGLISH

Precautions.....	5
Features.....	5
Connections.....	6
Panel information.....	8
Operating procedures.....	10
If you suspect a malfunction.....	16
Specifications.....	16

5 ~ 16

WARNING: To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

- The Model No. and Serial No. of your unit are shown on its back panel.

DEUTSCH

Vorsichtsmaßnahmen.....	17
Besonderheiten.....	17
Anschlüsse.....	18
Schalttafelinformation.....	20
Bedienungsverfahren.....	22
Bei einer vermutlichen Betriebsstörung...	28
Technische Daten.....	28

17 ~ 28

WARNUNG: Setzen Sie dieses Gerät zur Verhütung von Feuer- und Stromschlaggefahr weder Regen noch Feuchtigkeit aus.

- Die Modell- und die Seriennummer Ihres Gerätes sind auf der Geräterückseite angegeben.

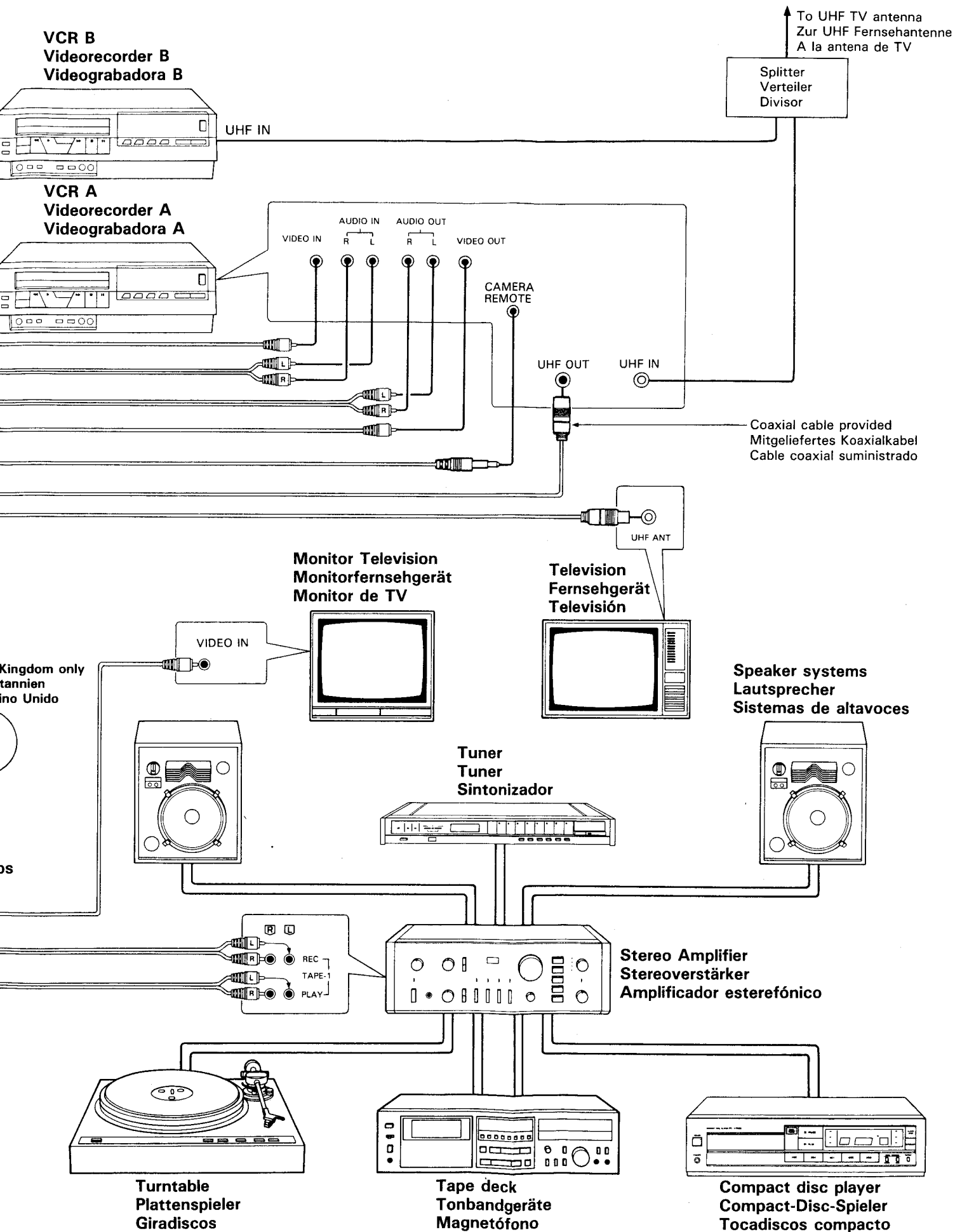
ESPAÑOL

Precauciones.....	29
Características.....	29
Conexiones.....	30
Información del panel.....	32
Procedimientos de operación.....	34
Si sospecha algún mal funcionamiento..	40
Especificaciones.....	40

29 ~ 40

AVISO: Para evitar incendios y descargas eléctricas, no exponer este aparato a la lluvia ni a la humedad.

- El Nº de modelo y el Nº de serie de este aparato están impresos en el panel posterior.



We are grateful for your choice of this SANSUI high fidelity product. Before you operate it, we suggest that you read this booklet once through carefully, familiarizing yourself with the important precautions, operational proce-

dures and every one of the product's many features. It will help to ensure that you will avoid possible damage and that the product's superb performance will be yours to enjoy for many years to come.

Precautions

* Bear in mind the following points.

Power plug

When disconnecting the power cord from the power outlet, always take hold of the plug, and not the wire, and pull free. Never connect or disconnect the power plug with wet hands since you may receive an electric shock.

* Remember to disconnect the power plug from the power outlet when you do not intend to use the unit for a prolonged period of time.

Do not remove the case and bottom panel

Any inspections or adjustments inside the unit may lead to malfunctions and electric shocks. Do not touch any of the inside parts. SANSUI's warranty is not effective if a deterioration in the unit's performance results from remodeling inside.

Installation precautions

Do not install the unit in any of the following locations since this may result in a deterioration in performance or malfunction:

- * Locations exposed to direct sunlight or near objects radiating heat such as heating appliances.
- * Locations exposed to moisture or humidity.
- * Locations with poor ventilation exposed to dust and dirt.
- * Locations which are unstable and not perfectly flat or which are susceptible to vibration.
- * On top of a high power output amplifier, audio components or any other product which radiates heat.

Do not wipe with thinners

Wipe the panels and case from time to time with a soft cloth. Using any kind of thinner, alcohol or volatile liquid will mar the surface, cause blotching on the exterior and erase the markings and should therefore be avoided.

Do not use insecticide sprays in the vicinity.

The color TV broadcasting formats employed throughout the world include "NTSC", "PAL" and "SECAM". Because this unit is designed specifically for "PAL", it cannot be used in areas where other formats are used or connected to a VCR which employs another format. The "PAL" format is divided regionally into "G-PAL" and "I-PAL" formats. This unit has been aligned with the format used in the area where it is sold, hence it is not possible to use it in an area where another format is used or connected to a VCR which employs another format.

Features

Creation of new video/audio source by connecting video equipment and audio equipment

The AV-77 can be connected to two VCR (video cassette recorders), a video camera, and a VDP (video disk player) or television tuner, that is, to a total of four items of video equipment, as well as audio equipment such as a stereo amplifier and tape deck.

Selection of these items of equipment and also dubbing between them can be done by a single pushbutton operation, enabling you to easily create an individualistic video/audio source consisting of a combination of video and audio with the addition of video and audio effects.

Various video effects using VIDEO EFFECTOR

It is possible to enjoy a wide range of video effects using the VIDEO EFFECTOR, which is provided with a video art function for modifying the original image of a VCR or video camera to a creative "arty" image, and also a SHARPNESS and DETAIL control function for making the image sharp or soft.

AUDIO EFFECTOR with various functions

This unit is provided with an AUDIO EFFECTOR which has the following functions:

- * Dbx noise reduction (NR) system which greatly improves the dynamic range of audio signals on video tape and audio tape.
- * MULTIDIMENSION function which enhances the special effect of a stereo source and imparts a stereo effect to a monaural source.
- * Microphone mixing and AUDIO INSERTER function which enables you to enjoy narrations and music during dubbing, even when using a VCR not provided with an audio dubbing function.
- * NOISE FILTER to reduce high frequency noise.
- * The unit is provided with a fader control which permits simultaneous fade-in or fade-out of video and audio, facilitating dubbing or editing of video tape.

For the United Kingdom only

Important

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral
Brown: Live

If the colours of the wires in the mains lead of this equipment should not correspond to the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured **blue** must be connected to the terminal which is marked with the letter 'N' or coloured black.

The wire which is coloured **brown** must be connected to the terminal which is marked with the letter 'L' or coloured red.

Ensure that your equipment is connected correctly. If you are in any doubt, consult a qualified electrician.

For equipment purchased outside the U.K. with a "EUROPEAN" two-pin mains plug, the plug should be removed and connections made in accordance with the above instructions. Ensure also that the equipment is properly adjusted to 240 volts operation. If you are in any doubt, consult a qualified electrician, or our Service Agent in the U.K.

Connections

Refer to page 3 connection diagram as you read the following.

Connection precautions

- When connecting, either disconnect the power plug from the power outlet or turn off the unit's power using the POWER switch.
- Before connecting, read through the Operating Instructions of the other audio components which will be connected to this unit.
- Check the left and right channels and connect properly (L to L and R to R).
- Insert the plugs securely. Improper connection can lead to the generation of noise.
- The input and output terminals of this unit are color coded as shown below.

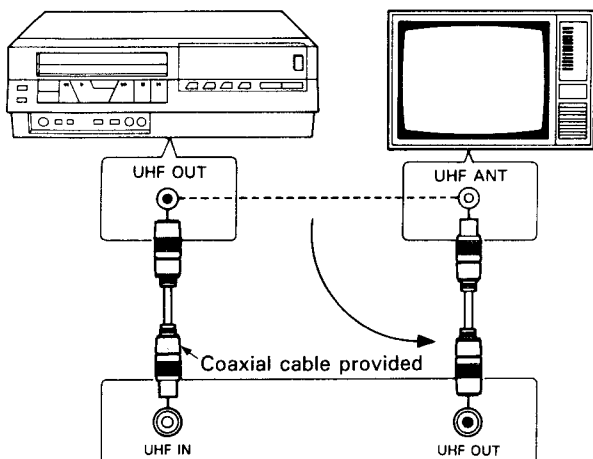
White: Left (L) channel audio signal terminal

Red: Right (R) channel audio signal terminal

Yellow: This is a video signal terminal. Connect a VCR coaxial cable (75Ω) to it.

Connecting UHF IN and OUT terminals

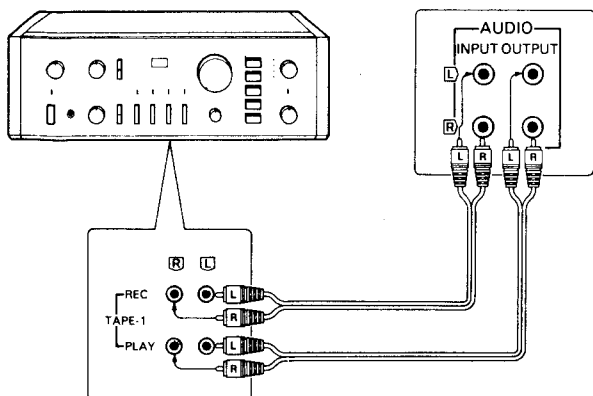
1. Disconnect the connector from the VCR side of the cable connected between the UHF OUT (RF OUT) terminal of VCR A and the antenna terminal of the television, and connect it to the UHF OUT terminal at the rear of this unit.
2. Connect the UHF OUT terminal of VCR A and the UHF IN terminal of this unit using the coaxial cable provided.



Connection with Amplifier

Using the accessory stereo amplifier connection pin-plug cord, connect the Tape Rec terminals of the amplifier to the AUDIO INPUT terminals on the rear panel of the unit. Connect the amplifier's Tape Play terminals to the AUDIO OUTPUT terminals on the unit.

(Be sure to connect the left (L) and right (R) terminals correctly, L to L, R to R).

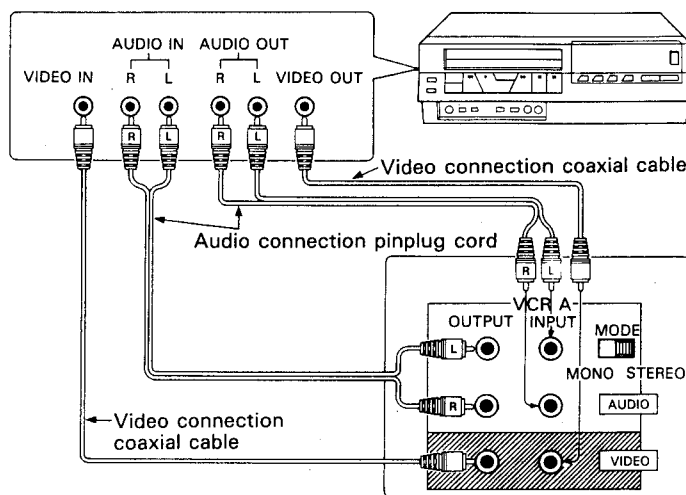


VCR connection

It is possible to connect two VCR to the VCR A terminal and VCR B terminal, respectively.

VCR B terminals are provided at both the rear and front panels. Connect a VCR to only one of these at a time. It is not possible to connect VCRs to both of these terminals simultaneously.

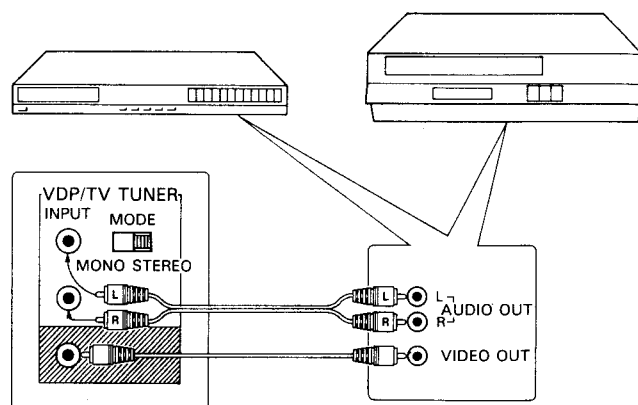
1. Connect the VIDEO INPUT terminal of this unit and the VIDEO OUT terminal of the VCR using coaxial cable.
2. Connect the AUDIO INPUT terminal of this unit to the AUDIO OUT terminal of the VCR using a pinplug cord.
3. Connect the VIDEO OUTPUT terminal of this unit to the VIDEO IN terminal of the VCR, using the video connection coaxial cable.
4. Connect the AUDIO OUTPUT terminal of this unit to the AUDIO IN terminal of the VCR, using audio connection pinplug cord.



Connecting video disc player (VDP) or television tuner

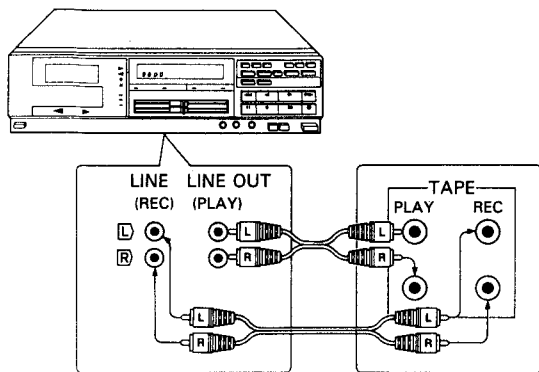
It is possible to connect a VDP, television tuner or the playback output of a third VCR to the VDP/TV TUNER terminal.

1. Connect the VDP/TV TUNER VIDEO INPUT terminal (yellow) of this unit to the VIDEO OUT terminal of the VDP, using a video connection coaxial cable.
 2. Connect the VDP/TV TUNER AUDIO INPUT terminal (white and red) of this unit using an audio connection pinplug cord.
- When connecting a television tuner or the playback output of a VCR, use the same cable as above.
 - When the audio output from the equipment being connected is monaural, connect either the L or R side of the AUDIO INPUT terminal, and set the MODE selector switch to MONO.



Tape Deck Connections

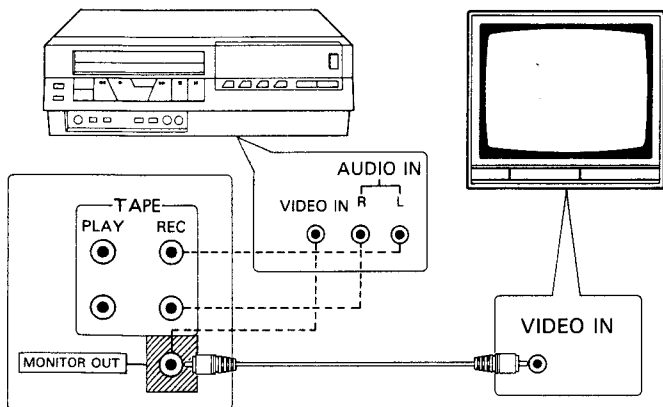
Connect the TAPE REC terminals on the unit to the LINE IN/REC terminals on the tape deck and the TAPE PLAY terminals on the unit to the LINE OUT/PLAY terminals on the tape deck.



Connecting monitor television

When using a monitor television, connect the MONITOR OUT terminal of this unit to the VIDEO IN terminal of the monitor television, using the video connection coaxial cable.

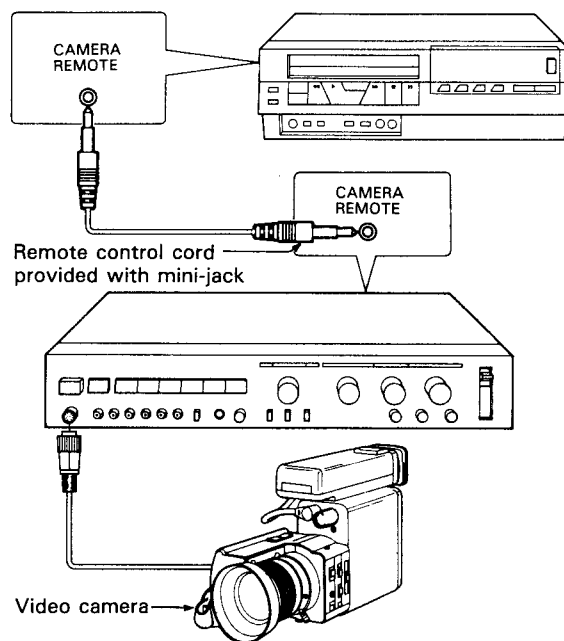
- * When listening to the audio output using the amplifier and speaker in the monitor television instead of a stereo amplifier, connect the AUDIO OUTPUT terminal of this unit to the AUDIO IN terminal of the monitor television, using the stereo amplifier connection pinplug cord.
- * When using three VCRs, it is possible to simultaneously dub from VCR A to the other two VCRs by connecting the TAPE REC terminal and MONITOR OUT terminal to the VIDEO IN and AUDIO IN terminals, respectively, of the VCRs. Perform wiring-----.



Connecting video camera

Align the groove of the video camera connector with the CAMERA terminal on the front panel of the unit, then insert the connector. Also, it is possible to remotely start/stop VCR recording when operating the video camera, by connecting the CAMERA REMOTE terminal at the rear of this unit to the CAMERA REMOTE terminal of the VCR, using the remote control cord provided with a mini jack.

- * It is not possible to use a video camera having a power consumption of more than 8 watts.
- * Although it is possible to use a VHS type video camera directly, the remote control start/stop operation may sometimes be reversed depending upon the video camera used.
- * The CAMERA terminal of this unit is a "round 10-pin J type terminal". Consequently, when connecting the unit to a beta type video camera (14-pin K type terminal), it is necessary to use a commercially available adapter. Consult with the shop where you purchased your unit.
- * The CAMERA REMOTE terminal on some VCRs is of small diameter, which may prevent the remote control cord from being used. In such a case, it is necessary to use a 3.5 dia. → 2.5 dia. conversion jack.
- * Some VCRs provided with a CAMERA terminal do not have a CAMERA REMOTE terminal. When a video camera is connected to this unit it is not possible to remotely control such a VCR.



IMPORTANT

Before connecting power plug to outlet

Before connecting the unit, be sure to always check as explained below that the unit voltage and the power source voltage match. If the unit is connected to a power source with excessive voltage, fire or breakdown may result.

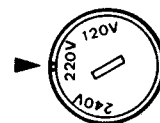
Units with voltage selector switch

Units with a voltage selector switch are set at the voltage of the particular sales region before shipment, but you should always confirm that the correct voltage has been set before connecting the unit power plug. If the voltages do not match, set the unit for the correct voltage with the VOLTAGE SELECTOR switch according to the following procedure.

- Units with 120V/220V/240V VOLTAGE SELECTOR switch at rear panel

These units are set at either 120V, 220V, or 240V with the VOLTAGE SELECTOR switch at the rear panel. To change the voltage turn the switch with a minus screwdriver or similar device until the slit (marking) and the display number are aligned.

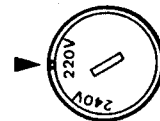
VOLTAGE SELECTOR



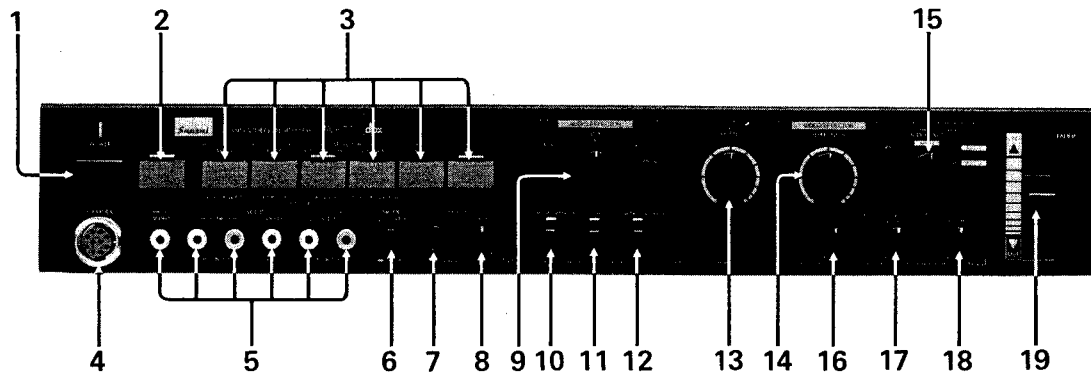
- Units with 220V/240V VOLTAGE SELECTOR switch at rear panel

These units are set at either 220V, or 240V with the VOLTAGE SELECTOR switch at the rear panel. To change the voltage turn the switch with a minus screwdriver or similar device until the slit (marking) and the display number are aligned.

VOLTAGE SELECTOR



Panel information



1 POWER switch

When this switch is pressed, power to the unit is turned ON, and the upper indicator lights. When pressed and released once more, power is turned off.

2 ANTENNA Switch

This switch is used to switch the signal output from the UHF output terminal at the rear of the unit.

When it is pressed, the indicator will light and set to VIDEO. When it is pressed once again, the indicator will go out and set to TV.

VIDEO: Video signals connected to this unit will be converted into television broadcast signals and output to an unused channel.

TV: The input from the antenna will be output without change, enabling you to enjoy the television broadcast connected to the unit.

3 SELECTOR/DUBBING MODE Switches

These switches are used to select the desired program source.

Use this switch also when performing dubbing. When it is pressed, the indicator will light.

VCR A (VCR A ► VCR B): Press this switch when playing back VCR A or dubbing from VCR A to VCR B.

VCR B (VCR B ► VCR A): Press this switch when playing back VCR B or dubbing from VCR B to VCR A.

VDP/TV TUNER (VDP ► VCR A/B): Press this switch when using a VDP (video disc player) or TV tuner connected to the corresponding terminals on the unit, or when dubbing to VCR A or B.

CAMERA (CAMERA ► VCR A/B): Press this switch when playing back the video from a video camera or recording onto VCR A or B.

AUDIO: Press this switch when listening to an audio program (record, CD record FM or AM broadcast, etc.) input to the amplifier connected to the AUDIO terminals.

TAPE: Press this switch and also the AUDIO switch when playing back a tape on the tape deck connected to the TAPE terminal.

4 CAMERA Terminal

This terminal is used to connect the video camera. It supplies power to the video camera and also inputs video, audio and remote control signals from the camera.

- * Before connecting or disconnecting the video camera, be sure to first turn off the POWER switch.
- * The audio is monaural.
- * It is not possible to observe the reproduced image from the VCR on the electronic viewfinder.

5 VCR B Input/Output Terminals

VIDEO IN: Connected to the VIDEO OUT terminal of VCR B.

AUDIO IN: Connected to the AUDIO OUT terminal of VCR B.

VIDEO OUT: Connected to the VIDEO IN terminal of VCR B.

AUDIO OUT: Connected to the AUDIO IN terminal of VCR B.

- * It is not possible to use these terminals simultaneously with the VCR B terminals on the rear panel. Be sure to use only one terminal at a time.

6 MODE Selector Switch

When the audio of the VCR connected to the VCR B terminal is in stereo, set this switch to "STEREO (□)", and when it is in monaural, set the switch to "MONO (■)".

7 MIC Jack

When performing microphone mixing, insert the plug of the microphone into this jack.

- * When not using a microphone, withdraw the plug.

8 MIC MIXING LEVEL Control

This control is used for adjusting the mixing balance between the volume of the microphone inserted into the MIC jack and the volume of the program source (record, tape, FM, AM, etc.)

When it is turned towards the MIC side, the volume of the microphone will increase, and when it is turned to the SOURCE side, the level of the program source will increase.

It is possible to record the mixed audio on either a VCR or a tape deck.

- * When not using a microphone, turn this control to the SOURCE position.

9 dbx Switch

A dbx noise reduction (NR) system is one which compresses the audio signal during recording onto a VCR or tape deck, and expands it to the initial signal during playback, thereby reducing tape noise and greatly increasing the dynamic range. Set this switch when recording or playing back to or from a VCR or tape deck.

OFF: Set to this position when not using the dbx NR system.

PLAY: Set to this position when using the dbx NR system and playing back a recorded tape.

REC: Set to this position when using the dbx NR system and recording onto a tape.

DUBBING: Set to this position when using the dbx NR system and dubbing a recorded tape. Because the original tape will be recorded without change, a "dbx ON" tape will be made.

During playback, the audio signal will pass through the dbx NR system, resulting in a normal audio output.

Also, if this switch is set to the "PLAY" position, a "dbx OFF" tape will be made.

- * Note that if an error is made in setting this switch, it will not be possible to play back or record a normal audio signal.

10 NOISE FILTER Switch

If this switch is pressed during playback from a VCR or tape deck when high frequency noise is a problem, the indicator will light and the noise will be reduced. Normally, leave this switch off.

11 MULTIDIMENSION Switch

If this switch is pressed, the MULTIDIMENSION function will increase the "spread" of stereo reproduction, and in the case of monaural reproduction will produce a pseudo stereo effect. While this function is operating, the indicator will be lit.

12 AUDIO INSERTER Switch

If this switch is pressed during playback of a VCR, etc., the indicator will light and the audio from the VCR will go off, enabling an audio source (record, CD player, FM or AM, etc.) to be reproduced. Also, press the TAPE switch when reproducing audio from a tape.

It is possible to add an audio source or microphone mixing input to the video from a VCR, and dub the resulting output onto another VCR.

13 DETAIL Control

This control is used to control details of the image. When not using this function, turn the control fully left.

14 SHARPNESS Control

This control is used to make the contour of the image sharp or soft. When not using this function, turn the control fully left.

* The sharpness control can be used effectively to compensate the image quality during dubbing.

15 VIDEO ART selector switch

Using the VIDEO ART function, you can change the color signals and vary the color of the image at will.

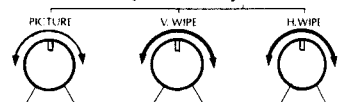
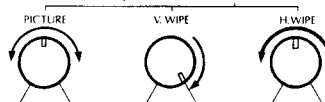
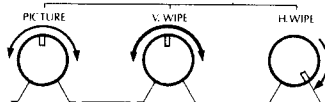
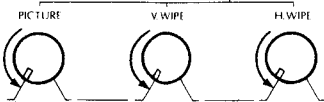
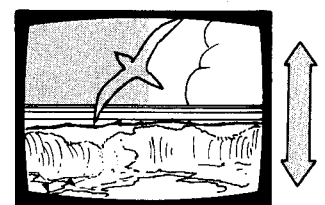
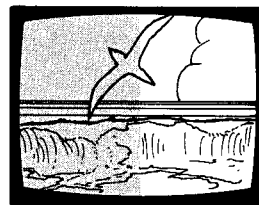
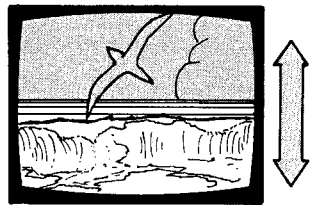
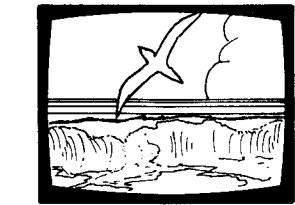
By using the three positions ART-1, 2 and 3 of this switch in combination with the PICTURE control, a large number of variations is possible.

OFF: Set the switch to this position when not using this function.

ART-1: When the switch is set to this position, video art effect 1 will be obtained.

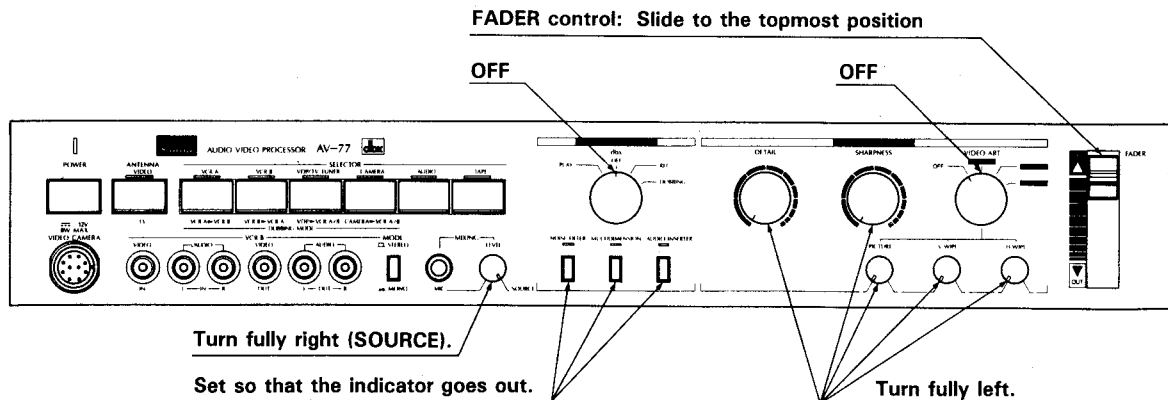
ART-2: When the switch is set to this position, video art effect 2 will be obtained.

ART-3: When the switch is set to this position, video art effect 3 will be obtained.



Before operation

Set the various controls and switches as shown below.



16 PICTURE Control

This control is used to control the degree of video art applied. The effect will increase as it is turned to the left.

17 Vertical wipe (V.WIPE) control

This control is used to control the vertical range of the applied video art effect. Turning it to the right will cause the video art effect to gradually appear from the top of the screen.

18 Horizontal wipe (H.WIPE) control

This control is used to control the horizontal range of the applied video art effect. Turning it to the right will cause the video art effect to gradually appear from the left of the screen.

Use this control in combination with the vertical wipe control to adjust the range of the video art effect.

19 FADER Control

This control is used to fade in or fade out the video and audio simultaneously. It is used when dubbing or editing video tapes or when switching from one image to another.

When this control is slid from the bottom to the top (fade-in), the image will gradually turn from black to full brightness, and the audio level will gradually increase.

When the control is slid from the top to the bottom (fade-out), the image will gradually turn from full brightness to black, and the audio level will gradually decrease.

* If this control is at the bottom, the image will be dark and the audio level will be low. Normally, leave it in a high position.

* This control can only control the video source and the source input when the AUDIO INSERTER switch is pressed. It cannot control the program source or audio from a tape.

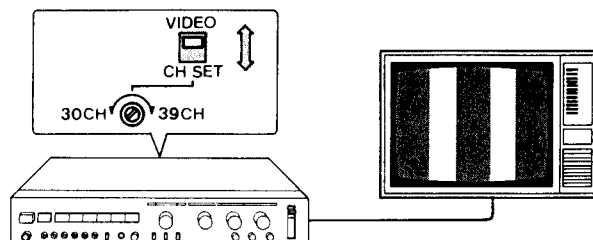
Operating procedures

Aligning output of RF converter with unused television channel

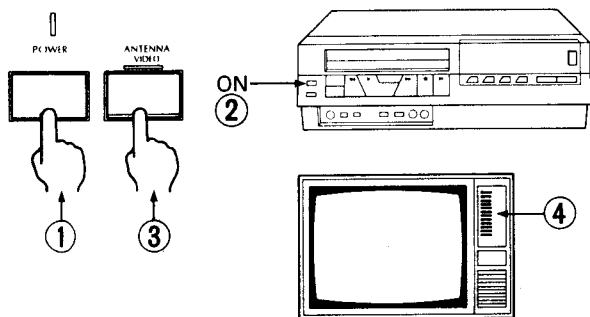
This unit contains an RF converter. An RF converter is a device which converts the video and audio of a VCR, etc., connected to the unit, into a signal which is identical to a television broadcast signal, and feeds it to an unused television channel.

- * This unit is set to channel 36 before leaving the factory. If there is no channel 36 in the area where the unit is used, tune the television as follows.
- 1. Set the VIDEO/CH SET switch on the rear of the unit to "CH-SET".
- 2. Put the television in a receiving condition. When channel 36 is received, a test pattern consisting of black and white stripes will appear on the screen. While observing this pattern, perform fine tuning of the television until the best receiving condition is obtained.
- 3. Return the VIDEO/CH SET switch to the "VIDEO" position.
- * In areas where there is interference from adjacent channels causing noise to appear on the screen when the television is set to channel 36, set the RF converter as follows.
- 1. Set the VIDEO/CH SET switch at the rear of the unit to "CH SET".

- 2. Put the television in a receiving condition, then set it to a channel between channels 30 and 39 where there is not television broadcast or noise.
- 3. Using a blade screwdriver, slowly turn the adjusting coil at bottom left of the VIDEO/CH SET switch until the black and white stripe test pattern appears on the screen, then continue turning the coil until the pattern becomes clear.
- 4. Perform fine adjustment of turning at the television side.
- 5. Return the VIDEO/CH SET switch to the "VIDEO" position.
- * If adjustment is difficult, consult with the shop where you purchased your unit.



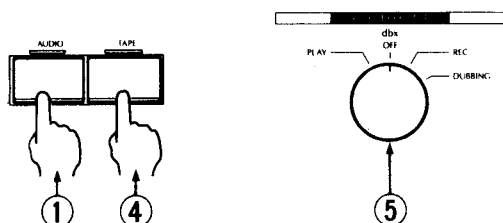
Watching television



1. Switch on the unit's power.
2. Turn ON the power switch of VCR A.
3. Set the ANTENNA switch to "TV" (indicator goes out).
4. Set the television channel selector to the desired program, and adjust the sound level using the volume control on the television.

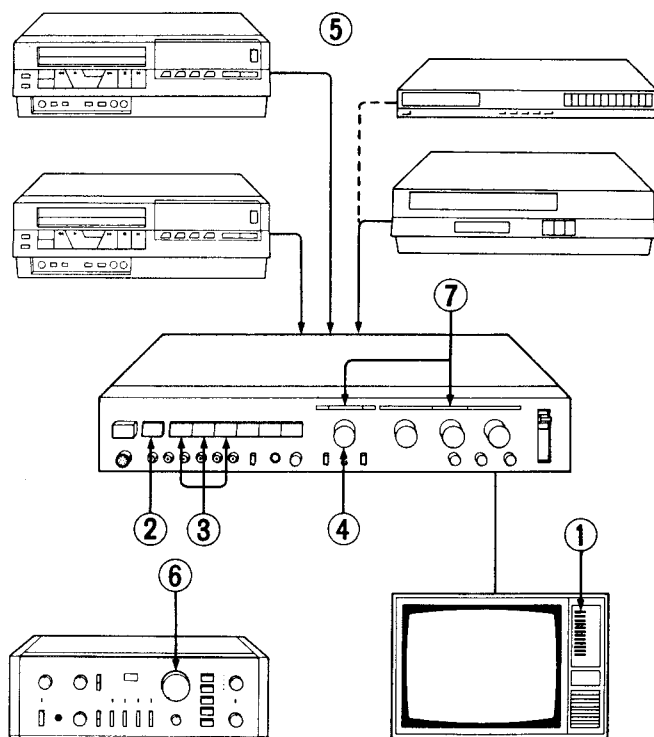
Reproduction of audio program

Carry out the following operation to reproduce sound from a record, CD player, AM or FM broadcast, etc.



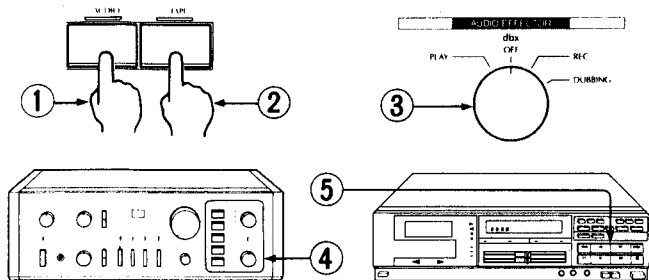
1. Press the "AUDIO" SELECTOR switch.
2. Align the selector switch of the amplifier with the program source to be played.
3. Operate the turntable, CD player, or FM/AM tuner, etc.
4. When playing back a tape deck connected to this unit, first press the "AUDIO" and "TAPE" SELECTOR switches.
5. When playing back an audio tape recording using the dbx NR system, set the dbx switch to "PLAY".
6. Adjust the sound level using the volume control on the amplifier.

Watching image on VCR, VDP or TV tuner



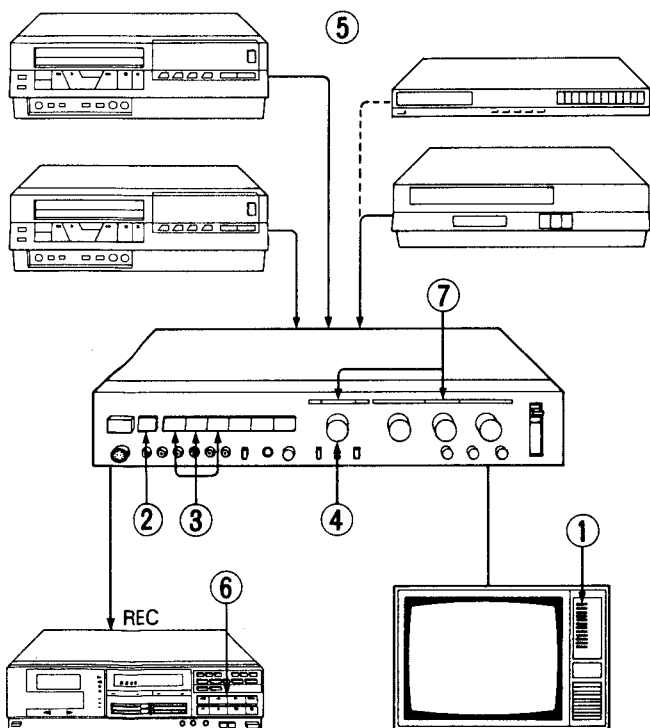
1. Set the television channel selector to the channel reserved for the VCR.
2. Set the ANTENNA switch to "VIDEO" (indicator lights).
3. Set the SELECTOR switch in accordance with the equipment used (VCR A, VCR B, VDP/TV TUNER).
4. When using the dbx NR system and playing back a recorded video tape, set the dbx switch to "PLAY".
5. Operate the VCR or VDP (playback) or TV tuner.
6. Adjust the sound level using the volume control of the amplifier or television.
7. It is possible to vary the video and audio at will using the VIDEO EFFECTOR and AUDIO EFFECTOR, respectively.

Recording an audio program onto a tape deck



1. Press the "AUDIO" SELECTOR switch.
 2. Set the TAPE switch to off (indicator goes out).
 3. When making a recording using the dbx NR system, set the dbx switch to "REC", and when not using the dbx NR system, set the switch to "OFF".
 4. Select the program to be recorded, using the amplifier selector switch.
 5. Operate the tape deck and make a recording.
- * Because it is not possible to monitor the source being recorded, perform recording with the TAPE switch in the off position.
- * It is not possible to use the MULTIDIMENSION switch and FADER control.

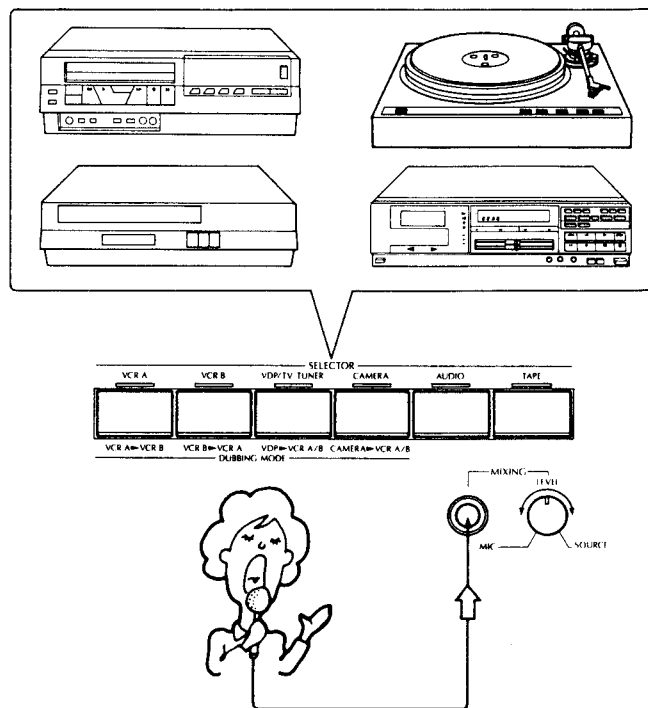
Recording the audio from a VCR or VDP/TV tuner onto a tape deck



1. Set the channel selector of the television to the channel reserved for the VCR.
 2. Set the ANTENNA switch to "VIDEO" (indicator lights).
 3. Select the program source to be recorded, using the SELECTOR switches. (VCR A, VCR B, VDP/TV TUNER)
 4. Set the dbx switch.
OFF: When recording without using the dbx NR system.
REC: When recording using the dbx NR system.
DUBBING: When recording a video tape recorded using the dbx NR system, in the "dbx ON" condition.
PLAY: When recording a video tape recorded using the dbx NR system, in the "dbx OFF" condition.
 5. Play a VCR, VDP or TV tuner.
 6. Operate the tape deck and commence recording.
- * It is possible to increase the "spread" of the sound by pressing the MULTIDIMENSION switch.

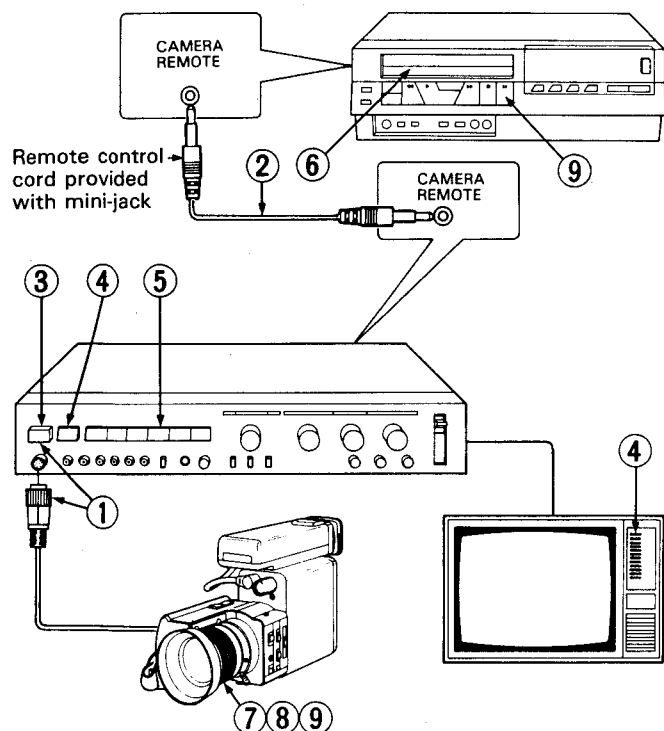
Method of microphone mixing

It is possible to mix the input from a microphone with the audio from a VCR, record, tape, etc., and record the resulting audio onto another VCR or tape deck.



1. Insert the microphone into the MIC jack.
 2. Set the SELECTOR switch to the program source, then play the program source.
 3. Adjust the mixing level using the MIXING LEVEL control. Turning the control to the "MIC" side will cause the input from the microphone to increase, and turning it to the "SOURCE" side will cause the input from the source to increase.
 4. It is possible to record the mixed audio onto a tape deck or VCR.
- * When not using a microphone, be sure to withdraw the plug from the MIC jack, and rotate the MIXING LEVEL control to the "SOURCE" side.
- * It is not possible to mix the input from a microphone with the input from a tape which has been recorded using the dbx NR system (audio which has been compressed by dbx). Consequently, it is not possible to perform microphone mixing with the dbx switch in the "PLAY" or "DUBBING" position.
- * When using the microphone and also listening to the sound through the speakers, take care with the positioning of the microphone and speakers and also with the direction of the microphone as "howl" may occur.
- * Use a microphone with an impedance of 200 ohms to 10 kilohms; it should be a dynamic or electret type. If the microphone's impedance is too low, the sensitivity may be insufficient.

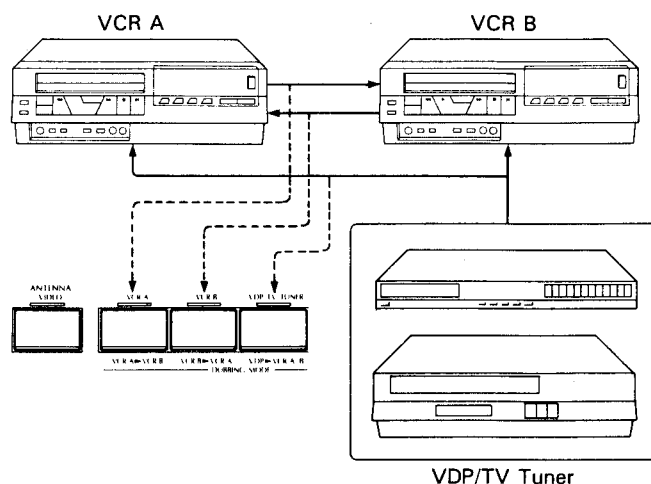
Method of recording using video camera



1. After turning off the POWER switch of this unit, connect the connector of the video camera to the CAMERA terminal.
 2. Connect the CAMERA REMOTE terminal at the rear of the unit to the CAMERA REMOTE terminal on the VCR using the remote control cord provided with a mini-jack.
 3. Turn on the POWER switch.
 4. Set the ANTENNA switch to "VIDEO", and set the television to the channel reserved for use with video equipment.
 5. Press the "CAMERA" selector switch.
 6. Load a tape on the VCR, and perform recording preparations.
 7. Adjust the focus and white balance of the video camera while looking through the electronic viewfinder or watching the television.
 8. Press the start/stop switch of the video camera and start recording.
 9. To momentarily stop recording, press the start/stop switch once again. To stop recording, press the STOP switch on the VCR.
- * It is possible to change the image in various ways using the VIDEO EFFECTOR.
 - * It is not possible to control the VCR from the camera side when using a camera with a video control function.
 - * To prevent howling, turn down the volume of the television or amplifier during recording.

Method of dubbing (tape copy) using a VCR

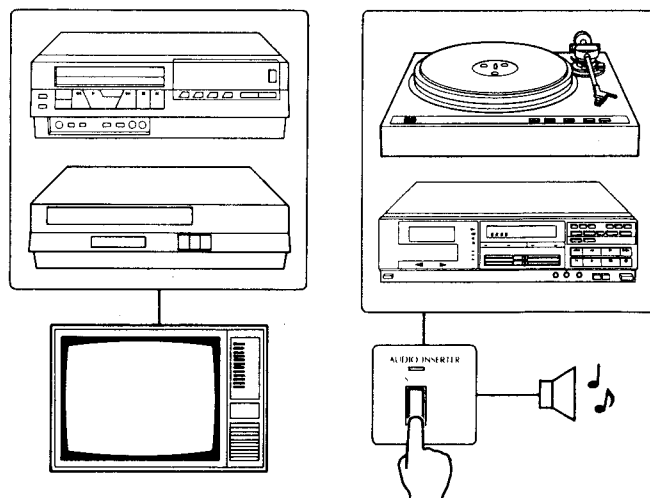
It is possible to dub video and audio from one VCR to another or from a VDP/TV tuner to a VCR.



1. Set the television to the channel reserved for the VCR.
 2. Set the ANTENNA switch to "VIDEO".
 3. Set the SELECTOR switch to the source to be played.
 4. Set the dbx switch while referring to the relevant paragraph (page 16).
 5. Load the tape on which a recording is to be made, in the VCR, then set the input selector switch to "external input" in preparation for recording.
 6. Put the VCR, VDP or TV tuner in a play condition.
 7. Operate the VCR on the recording side to start recording.
 8. To stop recording, first press the stop switch on the VCR.
- * It is possible to change the video and audio at will using the VIDEO EFFECTOR and MULTI DIMENSION switches.
 - * It is possible to listen to an audio program source while fading in or fading out the video and audio simultaneously by means of the FADER control.

Listening to an audio program source while watching the video on a VCR, VDP or TV tuner

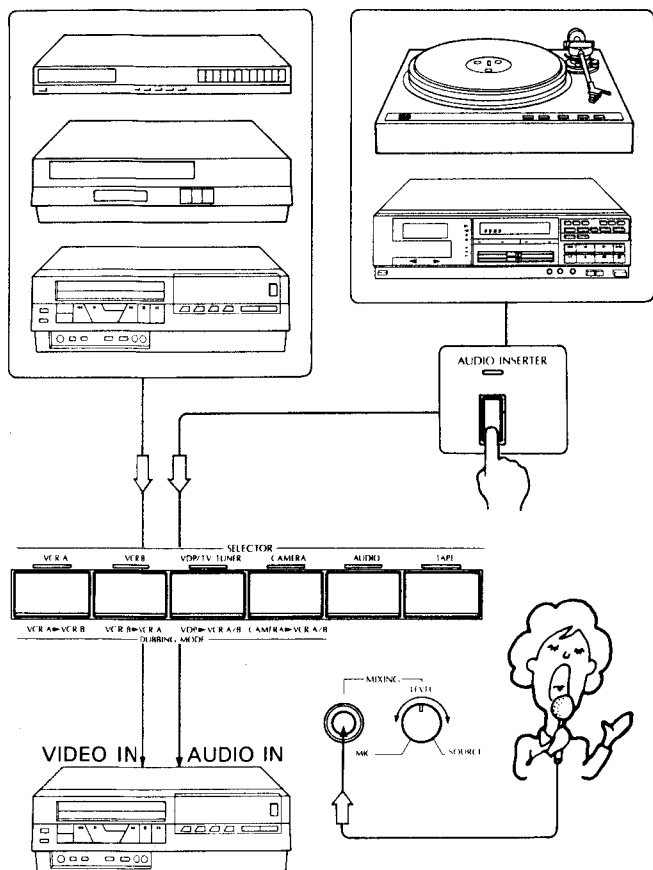
Use the AUDIO INSERTER switch to enjoy BGV (Background Video) in which audio from a record, tape, FM or AM, etc., is added to the video from a VCR, and so on.



1. Play the VCR, VDP or TV tuner.
2. When the AUDIO INSERTER switch is pressed, only the audio will be cut.
3. Select a program source (record, FM, AM, etc.) using the selector switch on the amplifier.
4. When playing a tape on a tape deck, press the TAPE switch. When using a tape which has been recorded using dbx, set the dbx switch to "PLAY".
5. When the turntable, FM/AM tuner, or tape deck, etc., is put in the play condition, only the audio will be replaced.

Method of dubbing by replacing only the audio of a video program source using the AUDIO INSERTER

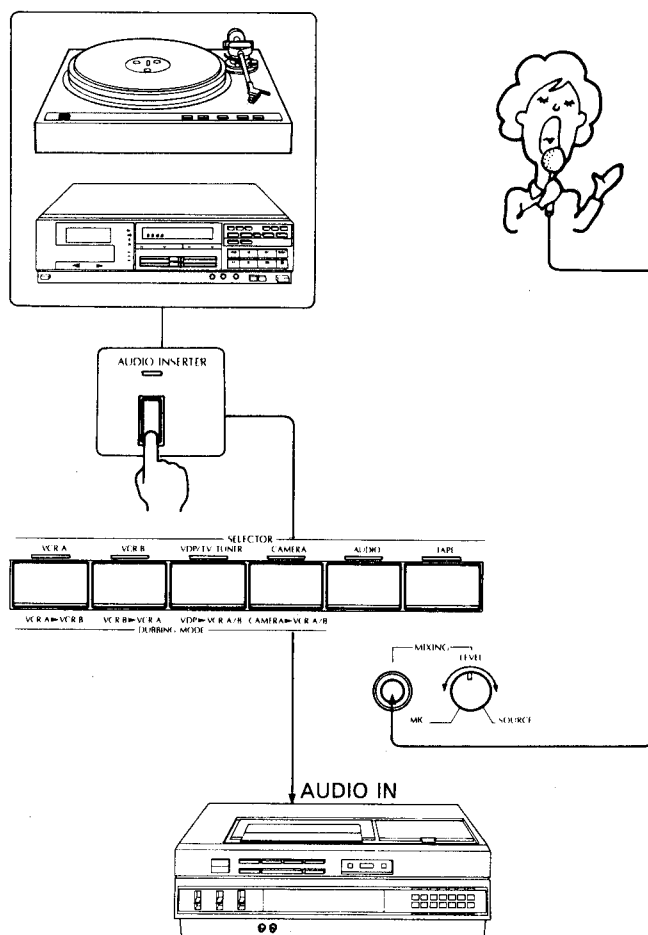
When dubbing from a VCR to a VCR, or from a VDP or TV tuner to a VCR, it is possible to replace the audio alone with an audio program source, or to add narration by microphone mixing.



1. Set the television to the channel reserved for the VCR.
2. Set the ANTENNA switch to "VIDEO" (indicator lights).
3. Set the SELECTOR switch to the video equipment to be played. The DUBBING MODE will be set.
4. Set the selector switch on the amplifier to the desired audio program source.
5. When adding audio from a tape deck, press the TAPE switch.
6. Turn off the AUDIO INSERTER switch (indicator goes out).
7. Set the dbx switch.
OFF: When recording on a VCR without using the dbx NR system.
REC: When recording on a VCR using the dbx system.
 * When alternately recording audio from an audio tape and a video tape, use tapes which are both in the same condition, that is, "dbx OFF" or "dbx ON". In the case of "dbx ON", set the switch to "DUBBING". It is not possible to perform microphone mixing onto a "dbx ON" tape.
8. Prepare for recording by loading a tape onto the recording VCR, setting the input selector switch to "external input", and setting the recording time mode.
9. Play the playback side VCR, VDP or TV tuner.
10. Start recording using the VCR at the recording side.
11. Once the portion of the VCR tape where the audio program is to be inserted is reached, set the AUDIO INSERTER switch to ON. The VCR audio will change to the audio program source which will be recorded.
12. By using a microphone and adjusting the MIXING LEVEL, it is possible to insert narration or make a mixed recording with a program source.

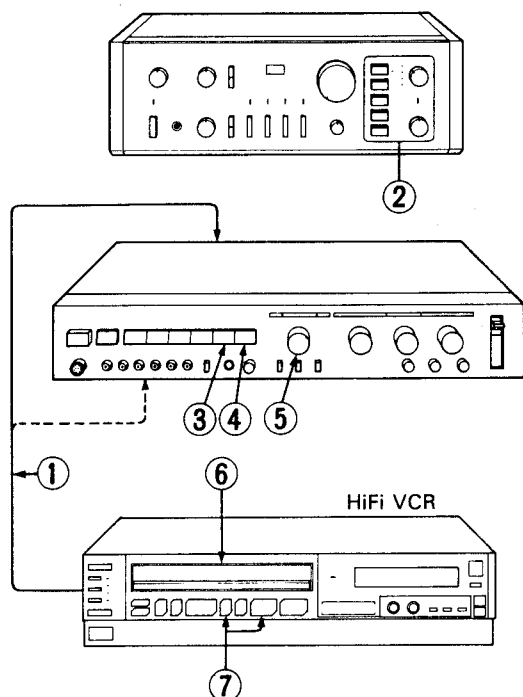
Method of recording an audio program source or narration using the audio dubbing function on the VCR

By using a VCR provided with an audio dubbing function, it is possible to record a new audio program source or a narration onto the audio track of a recorded video cassette.



1. Set the television to the channel reserved for the VCR.
 2. Set the ANTENNA switch to "VIDEO" (indicator lights).
 3. Set the SELECTOR switch to the VCR to be used.
 4. Select the program source using the selector switch on the amplifier.
 5. When recording off a tape deck, press the TAPE switch.
 6. Turn off the AUDIO INSERTER switch (indicator goes out).
 7. Set the dbx switch while referring to the relevant paragraph (page 16).
 8. Search for the portion of the VCR tape where audio dubbing is to be performed, then stop the VCR.
 9. Press the AUDIO INSERTER switch and play the audio program source, then start audio dubbing of the VCR. The new audio source will be dubbed onto the original video.
- * This operation is possible only on a VCR provided with an audio dubbing function.

Method of recording and playback of a HiFi VCR used as an audio deck



Recording

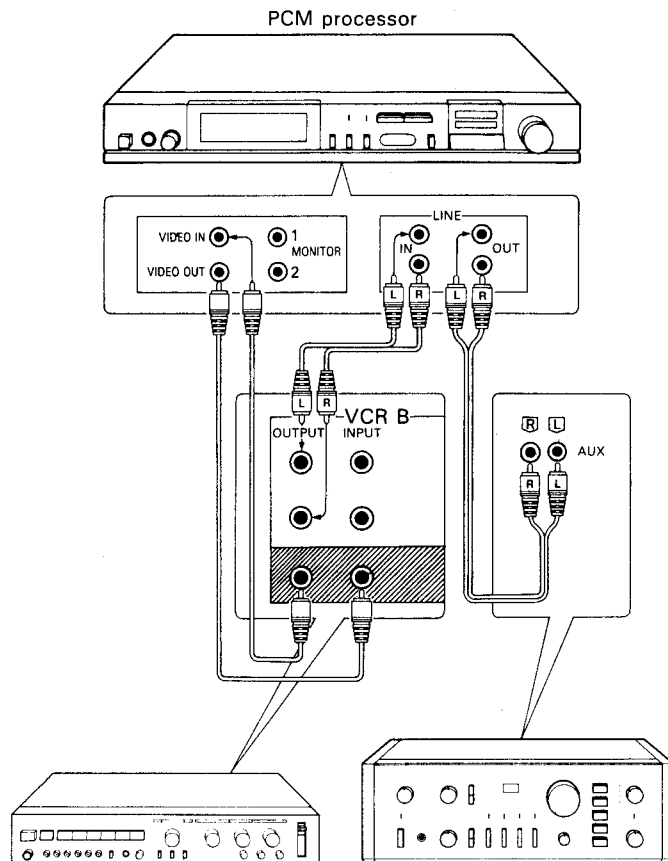
1. Connect the HiFi VCR to the VCR A or VCR B terminal.
2. Select the audio source to be recorded, using the amplifier selector switch.
3. Press the "AUDIO" SELECTOR switch.
4. When recording from a tape deck, press the "TAPE" switch.
5. Set the dbx switch while referring to the relevant paragraph (page 16).
6. Prepare for recording by loading a tape on the HiFi VCR, setting the input selector switch to external input, and setting the recording time mode.
7. When recording is started, recording of the audio will take place.

Playback

1. Press "VCR A" or "VCR B" of the SELECTOR switch, in accordance with the HiFi VCR to be played.
 2. To play a tape recorded using the dbx NR system, set the dbx switch to PLAY.
 3. When a recorded tape is loaded on the VCR and the playback switch pressed, HiFi recorded sound will be played back.
- * For details, read the HiFi VCR instruction manual.

Connection and operation of PCM processor

By connecting a PCM processor and VCR to this unit, it is possible to convert the input from the audio source into digital signals before recording or playing it back to or from the VCR. Connect the PCM processor as shown in the drawing.



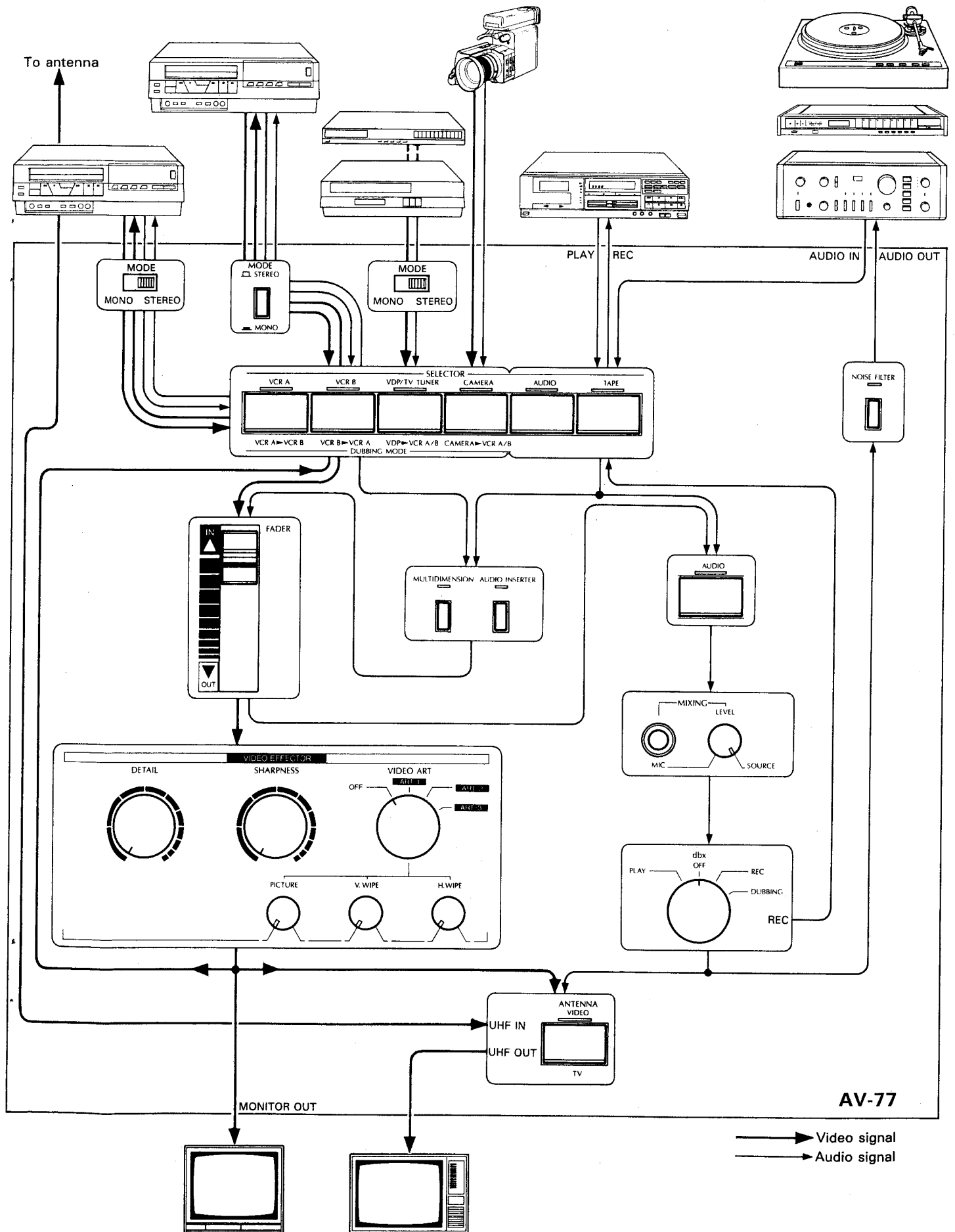
Recording

1. Press the "VCR B" SELECTOR switch.
2. Select the program source to be recorded, using the selector switch on the amplifier.
3. When recording from a tape deck, press the TAPE switch.
4. Press the AUDIO INSERTER switch (indicator lights).
5. Set the PCM processor to the recording mode, play the audio program source and set the recording level.
6. Perform recording preparations by loading a recording tape on the VCR, setting the input selector switch to external input, and setting the recording time mode.
7. When VCR recording is started, PCM recording will take place.

Playback

1. Press the "VCR A" selector switch, and turn off the AUDIO INSERTER switch.
 2. Set the selector switch on the amplifier to "AUX".
 3. Set the PCM processor to the playback mode.
 4. Load a PCM recorded tape on the VCR and play it.
 5. Adjust the sound level as desired, using the volume control on the amplifier.
- * When carrying out recording or playback using a PCM processor, turn the DETAIL and SHARPNESS controls fully left, and set the VIDEO ART selector switch and dbx switch to "OFF".
- * For details, refer to the instruction manual of the PCM processor.

Flow of video and audio signals



Setting dbx switch

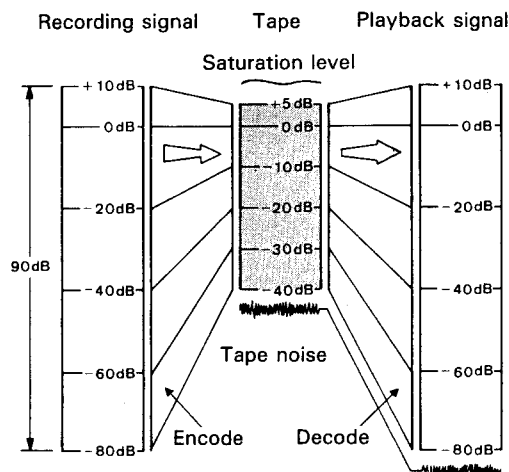
Set the dbx switch as follows when playing back, recording or dubbing a video tape or audio tape.
If the switch is set incorrectly, an abnormal playback or recording condition will result.

Program source to be played back	dbx switch position		dbx condition of recorded or dubbed tape
"dbx OFF" tape or audio program source	During playback	"OFF"	
	During recording or dubbing	"REC"	"dbx ON"
		"OFF"	"dbx OFF"
"dbx ON" tape	During playback	"PLAY"	
	During dubbing	"DUBB-ING"	"dbx ON"
		"PLAY"	"dbx OFF"

- * It is not possible to mix the input from a microphone with the input from a tape which has been recorded using the dbx NR system (audio which has been compressed by dbx). Consequently, it is not possible to perform microphone mixing with the dbx switch in the "PLAY" or "DUBBING" position.

dbx NR system

The dbx NR system expands (decodes) during playback, signals which were compressed (encoded) during recording, thus improving the tape noise and saturation level, and widely expanding the dynamic range. As shown in the diagram, signals are compressed by one-half and recorded on the tape; during playback, these signals are expanded by two-fold, thus restoring the original signal.
During normal recording, due to the inherent tape characteristics, dynamic range is limited to around 60 dB, but when dbx NR is used during recording, signals with a dynamic range of 90 dB are compressed to 45 dB and recorded on the tape; during playback these same signals are expanded two-fold, thus achieving a dynamic range of 90 dB, and greatly reducing tape noise.



- * "dbx" is a trademark of DBX Incorporated. DBX noise reduction system manufactured under license from DBX Incorporated.

If you suspect a malfunction

Sometimes the reason for a breakdown of this unit is misoperation or a failure of another piece of equipment.
Before calling the serviceman, carefully read the instruction manual once again and check the various connections and operation.

- * If no video is obtained, check the setting of the ANTENNA switch and FADER control.

- * If there is no audio, check the AUDIO INSERTER switch and MIXING LEVEL control. If the audio seems abnormal, check the dbx switch or MULTIDIMENSION switch.
- * Be careful of the settings of switches which are not normally used, such as the input selector on the VCR.

Specifications

Video section

VIDEO INPUT sensitivity/Impedance..... 1.0 Vp-p/75 ohms
VIDEO OUTPUT level/Impedance..... 1.0 Vp-p/75 ohms
Signal-to-noise ratio (video signal)
VCR A, VCR B, VDP → VIDEO
OUTPUT 62 dB
Frequency response (video signal)..... 6.5 Hz ~ 10 MHz -3 dB
AUDIO INPUT sensitivity/Impedance -6 dBs/47 kohms
AUDIO OUTPUT level/Impedance -6 dBs/47 kohms
Signal-to-noise ratio (IHF-A)
VCR B, VDP → VCR A OUTPUT Better than 80 dB
VCR A, VCR B, VDP → AUDIO
OUTPUT Better than 80 dB
Frequency response
VCR B, VDP → VCR A OUTPUT 20 Hz ~ 100 kHz -3dB
VCR A, VCR B, VDP → AUDIO
OUTPUT 20 Hz ~ 100 kHz -3 dB
UHF OUT signal 30 ~ 39 ch (adjustable)

Audio section

Input sensitivity/Impedance
AUDIO INPUT, TAPE PLAY 150 mV/47 kohms
MIC 0.5 mV/10 kohms
Signal-to-noise ratio
AUDIO INPUT, TAPE PLAY →
AUDIO OUTPUT Better than 80 dB
MIC → AUDIO OUTPUT Better than 50 dB

Frequency response

AUDIO INPUT, TAPE PLAY →
AUDIO OUTPUT 10 Hz ~ 100 kHz -3 dB
Output level/Impedance 150 mV/2.2 kohms
Maximum output level 1V
Total harmonic distortion
AUDIO INPUT, TAPE PLAY →
AUDIO OUTPUT Less than 0.08% at 1 kHz
dbx noise reduction effect..... -30 dB at 1 kHz
NOISE FILTER..... 3 kHz -6 dB/oct

Others

Power requirements..... 120/220/240V
50/60 Hz
Power consumption..... 33 watts (with camera)
Dimensions 430 mm (16-15/16")W
76 mm (3")H
265 mm (10-7/16")D
Weight..... 3.7 kg (8.2 lbs) net
4.6 kg (10.1 lbs) packed

- * Design and specifications subject to changes without notice for improvements.
- * In order to simplify the explanation illustrations may sometimes differ from the originals.